

## Electrochemical amination. synthesis of aniline in aqueous-acetonitrile solutions of sulfuric acid

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### Abstract

© 2015, Pleiades Publishing, Ltd. The process of indirect cathodic amination of benzene is studied in aqueous media containing 4-10 M H<sub>2</sub>SO<sub>4</sub> and, accordingly, 13.8-7.1 M CH<sub>3</sub>CN. At 50°C, electrolysis in the system of Ti(IV)-NH<sub>2</sub>OH-C<sub>6</sub>H<sub>6</sub> results in formation of aniline and also small amounts of isomeric phenylenediamines and diphenyl. The current efficiency of aniline is maximum in the catholyte containing 8 M H<sub>2</sub>SO<sub>4</sub> and 9.4 M CH<sub>3</sub>CN. Under these conditions, full conversion of hydroxylamine is observed; the 80% current efficiency of aniline corresponds to the efficiency of the amino radical source and its mass fraction among the products of electrolysis exceeds 97%.

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### Keywords

amino cation-radical, aniline, benzene, cathode, cation-radical aromatic substitution, hydroxylamine, Ti(IV)/Ti(III) mediator system